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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/585,573

07/10/2006

Toshiki Shimizu

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EXAMINER

NGUYEN, HOA CAO

ART UNIT

PAPER NUMBER

2841

MAIL DATE

DELIVERY MODE

08/20/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/585,573 | Applicant(s) SHIMIZU ET AL. | |
| | Examiner HOA C. NGUYEN | Art Unit 2841 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 4-6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/10/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onizuka et al. (US 20030137813, hereafter Onizuka) in view of Chapmen et al. (US 2003/0003800, hereafter Chapmen).

Regarding claim 1, as shown in figures 1-2, Onizuka discloses a circuit module comprising:

(a) a plurality of bus bars 11 (par.72) arranged approximately in a same plane to form a power circuit (par.70);

(b) a control circuit board 20 (par.76) in which a control circuit for controlling electrical continuity of the power circuit is built, being bonded to the bus bars 11, and provided with a conductor segment 24 (through hole connection portion, figure 14A-18B, par.119) to be electrically connected to at least a specific one of the bus bars 11 on one surface of the control circuit board on the opposite side of the other surface bonded to the bus bars, and a through-hole (no reference number, figure 14B) penetrating a main body of the control circuit board 20 at a position adjacent to the conductor segment so as to expose a portion of the specific bus bar 11 (figures 15A-15B).

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However, Onizuka does not disclose an electrically-connecting member of a shape bridging between the through-hole and the conductor segment 24, and the electrically-connecting member being soldered onto both the conductor segment 24 and the exposed portion of the specific bus bar 11.

Chapmen, as shown in figure 3C, discloses a substrate 11a comprising an opening 26, an internal circuitry 13a (a ground) and a conductor segment 20 formed on the lower and upper surfaces of the substrate 11a. Chapman further discloses an electrically-connecting member 29 (connecting wire, par.37) of a shape (any shape, par.42) bridging between a through-hole 26 (through via, par.37) and the conductor segment 20, the electrically-connecting member 29 being soldered onto both the conductor segment 20 and the exposed portion of the specific circuitry 13a.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use an electrically-connecting member (such as the connecting wire 29 of Chapman) of a shape bridging between the through-hole and the conductor segment 24 of Onizuka, and the electrically-connecting member being soldered onto both the conductor segment 24 and the exposed portion of the specific bus bar 11 of Onizuka in order to electrically connect a module having floating signals to the printed circuit board 20 (see Chapman, par. 9 and 41).

Regarding claim 2, Onizuka in view of Chapman discloses the electrically-connecting member 29 (taught by Chapman) is inherently formed of a metal plate (the wire 29 of Chapman is 3-5 mils thick, see par.42), and inherently disposed in a posture approximately parallel to the control circuit board 20.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onizuka and Chapman as applied to claim 2 above, and further in view of Suzuki et al. (US 6372998, hereafter Suzuki).

Regarding claim 3, Onizuka in view of Chapman discloses every limitation as shown in claims 1-2 above including the electrically-connecting member has a surface soldered onto the conductor segment and a surface soldered onto the exposed portion of the specific bus bar, but fails to disclose the connecting member is formed with a step portion providing a height difference approximately equal to a board thickness of the control circuit board, between the surfaces.

Suzuki, as shown in figures 3 and 4, discloses an electrically-connecting member 24 connecting between an upper and lower surface of a circuit board 23 through a hole 23A. The electrically-connecting member 24 (a busbar) is formed with a step portion 24B providing a height difference approximately equal to a board thickness of the circuit board 23, between the upper and lower surfaces.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the electrically-connecting member 24 of Suzuki on the board of Onizuka in order to provide a high current connection (since member 24 of Suzuki is indeed a busbar).

Allowable Subject Matter

4. Claims 4-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Reasons for allowance

5. The following is an examiner's statement of reasons for allowance:

(a) Regarding claim 4, the best prior art references, Onizuka, Chapman, and Suzuki, taken alone or in combination, fails to teach or fairly suggest, the electrically-connecting member is formed with a cutout in at least one of the portion soldered onto the conductor segment and the portion soldered onto the exposed portion of the specific bus bar. None of the reference art of record discloses or renders obvious such a combination.

(b) Regarding claims 5-6, the best prior art references, Onizuka, Chapman, and Suzuki, taken alone or in combination, fails to teach or fairly suggest, at least on claim 5, a plurality of through-holes adjacent to the conductor segment, and the electrically-connecting member formed in a shape bridging over the through-holes and the conductor segment is soldered onto the conductor segment and a specific one or more of the bus bars exposed through the through-holes. None of the reference art of record discloses or renders obvious such a combination.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Citation of Relevant Art

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

| | |
|------------------|--------------------|
| Takagi | US 20040242086 A1 |
| Nakamura et al. | US 20020081905 A1 |
| Onizuka et al. | US 20010026430 A1 |
| Schmid et al. | US 20030168252 A1 |
| DiStefano et al. | US 6370032 B1 |
| Kobayashi | US 4907991 A |
| Baechtle et al. | US 20020112883 A1. |

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOA C. NGUYEN whose telephone number is (571)272-8293. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dean A. Reichard/
Supervisory Patent Examiner, Art Unit 2841

Hoa C. Nguyen